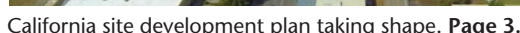
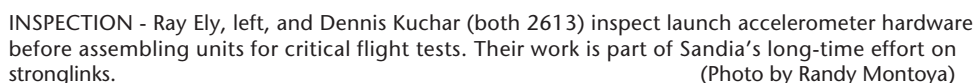


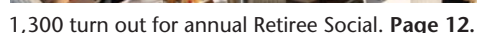
## ***Mechanisms that help ensure nuclear weapons remain safe***

The missile's boost phase causes the launch accelerometer to close multiple cir-

*(Continued on page 5)*



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It's both the hardest thing I do in my job – and the one task I feel most privileged to take on: writing brief stories honoring the memory of on-roll employees who pass away. It's hard because, when you start talking to friends and colleagues, you come to know the individual and you come to share the sense of loss. It's a privilege, too, because there should be no unsung heroes, and every person is the hero of his or her own life and deserves recognition as such. It's a privilege to help colleagues say "You mattered." And "Goodbye, friend."

On page 11 of this issue, we have a memorial to Mark Dickinson, who by every single account was just the nicest guy you'd ever want to meet and one of the most capable. I had the pleasure of talking to Mark a couple of times over the telephone, and that would be my assessment, too: He was a really nice, smart guy. Even over the phone – I never sat down and talked to him in person – you got the sense that Mark never met a stranger. I love talking to people like that. Not just because it makes my job easier (though it does) but because it's just so darned refreshing.

Mark was one of those guys who was so good at his job he made everybody else look good, too. We all love working with people like that, those standouts that we're lucky to have on our teams. That was Mark to a "T."

I never worked directly with him, but in a way, Mark made me look good, too, without ever knowing it. In that story on page 11, Mark's colleague Fran Current reflects about Mark's beloved, beat-up old 1980s-vintage Chevrolet Corvette. Fran describes it vividly, but you can take my word that when I say "beat-up" I'm being generous. It was ratty. There just isn't another way to put it. Not a printable one, anyway. There are states in this union where I'm pretty sure it wouldn't have been allowed on the road.

Along about the time he started driving that car to work, I bought a cheap commuter car, a 1991 Nissan Sentra that was almost – I say almost – as ratty as Mark's car. And I used to joke to my colleagues that I owed Mark big-time, because when I parked my car next to his it made mine look almost decent in comparison. So thanks, Mark. There are plenty of people around here – more than you ever knew – who would give anything to see that wonderful, ratty yellow 'Vette rumble into the parking lot this very day.

\* \* \*

Sandia has a legacy of exceptional service that is, well, exceptional. The Labs' many, many contributions to the nation's security are well-known by the people who matter, people who still turn to us often to help solve the thorniest technical challenges imaginable. And we deliver. That's a legacy we live up to and honor every day. We have another legacy, too: There's not another organization in New Mexico that comes close to matching Sandia's support for and involvement in the community. The annual Sandia Employing Caring Program campaign – the ECP drive – begins on Monday and runs through Oct. 25. Participating in that drive, contributing something to the cause, helps us honor our other legacy, the one that says Sandians are exceptionally caring and generous neighbors.

This year, I'm going to do something a little different. Like most everybody, I have my own favorite causes, charities, and nonprofits and the ECP donation process makes it easy for me to direct my donation to those worthy organizations. In years past, I've always chosen to have all my contributions go straight to my personal favorites. But this year, I'm opting to have some of my ECP contribution go into the Community Fund. That fund, managed by the United Way, supports the often unglamorous, uncelebrated agencies that do the tough, noble work of providing services to the least fortunate among us: the abused, the hurt, the hungry, the abandoned. The lost. You can read about some of the Fund's good works in the spread on pages 6-7.

Oh, I'll still send some of my too-small contribution to my favorites, but I'll direct some toward the real heroes out there, too. With the exceptional work they do, they remind me of us.

See you next time.

– Bill Murphy (505-845-0845, MS 1468, wtmurph@sandia.gov)

# Sandia releases updated electricity storage how-to guide

By Stephanie Holinka

Energy Storage Technology & Systems Dept. 6111 has released an updated handbook on energy storage, an internationally known resource for utilities, regulators, and others interested in electricity storage and power generation.

The book was created in collaboration with the Electric Power Research Institute (EPRI) and the National Rural Electric Cooperative Association (NRECA) and was funded by the DOE's Office of Electricity Delivery and Energy Reliability. A 10-member advisory panel representing all segments of the storage



AN UPDATED energy storage how-to guide could lead to new efficiencies in the nation's power grid. (Photo by Randy Montoya)

community guided the book's development, including people from electric utilities, regulators, system vendors, and industry associations.

"The handbook will fill an industry-wide need for a single resource representing the state of the art of energy storage," says Imre Gyuk, program manager of the energy storage program in DOE's Office of Electricity Delivery and Energy Reliability. Gyuk says he hopes the handbook will help put energy storage well on the road to full commercialization.

The handbook guides readers through topics based on their role, allowing utilities, system suppliers, regulators, consultants, and the public to quickly find what they need to evaluate and assess energy storage options for all types of grid-connected enterprises.

Sandia project lead Georgianne Huff (6111) says the handbook reviews available and emerging storage technologies in terms of important considerations such as cost, performance, and technology maturity. It also provides quantitative data on performance, design features, and life-cycle costs.

Lead author Abbas Akhil, now retired, says the handbook provides detailed information on storage technologies, ways in which they're best applied, and their life cycle costs. Akhil says the handbook also reviews analytical tools and describes the regulatory framework that adds incentives to the implementation of energy storage.

"Energy storage can be a valuable option in maintaining the high reliability and low cost of the modern grid. The book will be a valuable tool to utilities, regulators, and others who are interested in deploying grid storage systems in a safe, reliable, and cost-effective way," says Haresh Kamath, program manager for energy storage at the EPRI.

The previous edition of the handbook was published in 2003, when there were only a few demonstration projects and almost no commercially viable technology, so the book was limited to a survey of available storage technologies and analysis of potential applications. The current edition grew from a simple survey to becoming a thorough and comprehensive implementation guide.

"We are proud to collaborate on a tool that will spur new developments in the ongoing research on viable and economical methods of storing electricity," says Martin Lowery, NRECA's executive vice president of Member & Associate Relations.

Georgianne says the team hopes the book will help lead to improved technology, greater deployment of new and renewable power generation, and a well-structured regulatory environment, all of which will help implement a smarter and more flexible electric power grid.

DOE's Office of Electricity Delivery and Energy Reliability supports research on a wide spectrum of storage applications and a broad portfolio of technologies. For more information or to download the free handbook, visit Sandia's Energy Storage Systems website at [www.sandia.gov/ess](http://www.sandia.gov/ess).



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**Bill Murphy**, Editor ..... **505/845-0845**  
**Randy Montoya**, Photographer ..... **505/844-5605**  
**Mike Jones**, California site contact ..... **925/294-2447**  
**Michael Lanigan**, Production ..... **505/844-2297**

**Contributors:** Michelle Fleming (Ads, Milepost photos, 844-4902), Neal Singer (845-7078), Patti Koning (925-294-4911), Stephanie Holinka (284-9227), Darrick Hurst (844-8009), Stephanie Hobby (844-0948), Heather Clark (844-3511), Sue Holmes (844-6362), Nancy Salem (844-2739), Jennifer Awe (284-8997), Tim Desler (844-2502), Mario Alba (284-5768), Jim Danneskiold, manager (844-0587)

**Lab News fax** ..... **505/844-0645**  
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# CA site development plan taking shape

NW and high-security mission growth, LVOC prompt latest changes

By Mike Janes

For anyone visiting or working at Sandia/California, it's clear that change is coming fast at the site these days. But there's a method to the madness. "Our site development plan actually has a 25-year vision, though these latest changes clearly demonstrate an accelerated march toward that plan's implementation," says site operations director Denise Koker (8500).

First, over the past few years, the new Combustion Research Computation and Visualization (CRCV) facility and the Clean Energy Demonstration Field became part of the Livermore Valley Open Campus (LVOC) space. More liberal access policies were introduced at the Combustion Research Facility (CRF), which serves as the heart of LVOC and has recently been able to badge its own external visitors rather than requiring them to obtain a credential at a more out-of-the-way building across the site.

At the same time, physical modifications in the form of new fence lines, signs, and access paths have made it possible for external visitors to access Sandia/California via the eastern portion of the site in less obtrusive ways than ever before.

Now, as the Sandia/California site development plan moves forward, four additional (but already existing) buildings are moving into the site's General Access Area (GAA), which includes the LVOC grounds: Bldgs. 929 (biosciences and business development), 928 (Cybersecurity Technologies Research Laboratory, or CTRL), 925 (medical and health services), and 927 (formerly used for storage and now slated for future demolition).

The moves took effect on Sept. 27, although Bldg. 929 will remain a "property protection area" (PPA) for roughly two more months until new access control policies are firmly in place and understood by members of the workforce (see "Changes pose challenges, too," below right).

## 'Capability homes' meet demand for high-security, collaboration

"The Sandia/California site development plan enables Div. 8000 to meet our national security missions, now and into the future," says senior manager John Garcia, who oversees the site's facilities, security, and ES&H functions.

There are several key business drivers behind the plan, which was largely constructed with the site's capabilities and long-range division strategy in mind. The most urgent priorities, John says, are the need to nurture the site's growing nuclear weapon and high-security special program missions while also increasing the collaborative partnerships and public interactions vital to the success of the LVOC.

Site management is structuring those needs around "capability homes," or clusters of technical and programmatic capabilities identified over the past year's strategic planning process. Some 150 office moves have taken place around the site this fiscal year as "capability homes" begin to take shape. These office moves enabled the site's limited area space to grow as well; the south wing of Bldg. 940 (the Micro and Nano Technologies Laboratory, MANTL) and the second floor of Bldg. 911 have been converted from PPA to limited area to allow classified activities to take place.

Researchers engaged in homeland security and defense-related programs have moved into the limited areas of 911 and 940 to accommodate their growth, allow better collaboration, and transition out of Bldg.



THE CALIFORNIA SITE DEVELOPMENT PLAN calls for increased safety and surface areas for pedestrians and cyclists, but also considers the campus's natural habitat and environment. "The plan actually makes our site more beautiful," says Div. 8000 site operations director Denise Koker. (Photo by Dino Vournas)

910. Finally, the second floor of Bldg. 910 is being modified to enable Sandia to meet a growing demand for additional work.

## New 'front door' getting closer to fruition

One primary element to the long-term site development plan is a new "front door" to Sandia/California via the eastern portion of the campus. The vision, says John, is for external visitors to the site — including job candidates, academic partners, industry collaborators, vendors, and others — to enjoy a more inviting, welcoming introductory experience when arriving at Sandia.

Visitors to the site going to the CRF or other portions of the LVOC can already drive in to the campus from the east (Greenville Road), and this will continue with the move of Bldgs. 929, 927, 928, and 925 into the GAA. This extends the plan that was already in place for external visitors visiting the CRF complex and, within a few months, will incorporate a small badging kiosk ("Post 17") near the CRF that will replace a larger badging trailer that resides on East Avenue and Vasco Road to the west. Eventually, the badging activities that take place in Bldg. 911 will be relocated to the east side.

In the works is a new building, expected to be financed by a third party and leased back to the Labs, known as the Collaboration in Research and Engineering for Advanced Technology and Education (CREATE) facility. It is envisioned as the front-facing entrance to the campus and will house both programmatic research areas such as hydrogen and bioscience as well as "public interface" functions such as the badge office, human resources, and communications.

As part of the overall site development plan, CREATE will also enable the optimal use of other site facilities.

"Those of us in [Center] 8500 take up space in the limited area that we don't need to be in," says Denise. The estimated 86,000 gross square feet of flexible office, light laboratory, and collaborative space that will comprise CREATE translates into 86,000 square feet of space that will then be freed up for other national security functions.

Another change is to Bldg. 925, Sandia/California's medical facility. The lobby is now part of the GAA, which means unfettered access by spouses and other visitors, but the core of the building (medical offices and records) will remain a "PPA island" and thus accessed only via badge swipe.

A Virgin HealthMiles kiosk is now located in the Bldg. 925 lobby so that spouses and members of the workforce have access. The new arrangement also makes the 925 Health Informa-

## Sandia California News

tion and Lending Library available to spouses.

Denise points out that the long-term vision for the site includes not only fence moves, turnstiles, and pathways, but safety, environmental, and even aesthetic considerations.

"Part of the plan is focused on increasing the safety and surface areas as you walk around the site," Denise says. "But we're also thinking about the environment. This is not just about new buildings and surfaces; it's about people and the habitat. We have a 10-year development plan for the arroyo, for instance, that creates habitat and migration corridors for threatened species. This actually makes our site more beautiful."

## Changes pose challenges, too

The latest changes, while making access and collaboration in the four buildings easier and fitting neatly into the site's long-term development plan, pose some challenges for management, particularly in the area of vouching policy. Designing a security plan for Bldg. 929, where much of the site's bioresearch technologies and intellectual property resides, was especially tricky since occupants of that facility need non-cumbersome access to the Labs' restricted computer network.

A team from cybersecurity, counterintelligence, physical security (both New Mexico and California), and managers from Centers 8600, 8500, and 8900 came up with a solution that includes badge swipe access on all exterior doors of Bldg. 929, 24/7. Additional safeguards designed to reduce the risk of unauthorized computer network access are also being implemented.

Long-term visitors who are US citizens will be issued a Sandia badge and will have the same access privileges as uncleared US citizen members of the workforce, while non-US citizens will be issued a Sandia badge that authorizes access to the building on their Foreign National Request (FNR). Short-term (1-2 days) visitors to the building — both US and non-US citizens — will receive a temporary badge with no swiping privileges, allowing access only via host vouching.

"We're excited to be moving into the GAA in a couple of months," says Anup Singh (8620), senior manager in the biological science and technology group and an occupant of Bldg. 929. "We need to be there in order to truly engage more effectively with partners and industry." Anup says the security protocols are essentially like those at well-known companies like Google, Apple, and General Motors.

"Companies do this all the time," he says. "You can't just walk into Google freely. Like Sandia, they don't want people walking in without knowing who they're going in to meet, or without a specific business purpose. So someone needs to escort you, and that's how it will operate here."

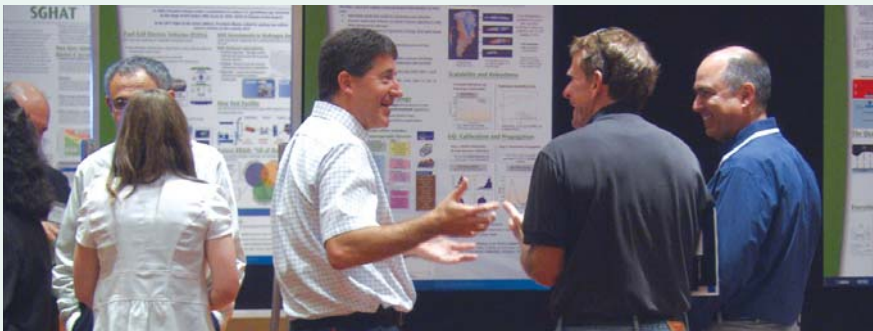
Anup stressed that even with a new fence line as of late September, Bldg. 929 will still be a "PPA island" for roughly eight more weeks. Until it becomes part of the GAA, anyone entering that facility will need to swipe their badge. Vouching will not be permitted during that period.



THIS NEW PEDESTRIAN TURNSTILE, located near the southwest corner of Bldg. 929, is within easy walking distance of the Applied Biosciences Laboratory (ABL), where many occupants of 929 conduct research activity. The turnstile will allow access for members of the workforce between Bldg. 929, soon to be in the General Access Area, and the California site's Property Protection Area (PPA). (Photo by Steffan Schulz)



# Sandia generates buzz with Research & Technology Showcase



SANDIA RESEARCHERS SHARED IDEAS with community members at the second annual Research & Technology Showcase poster session. More than 40 posters spotlighted Sandia work in bioscience, computing and information science, energy and climate, and nanodevices and microsystems.

By Nancy Salem

Sandia took its research and technology transfer messages to the community for a second year at a daylong event that drew nearly 400 people from academia, industry, business, and technology. “This was an experiment last year that worked,” Dan Sanchez, DOE technology partnerships manager for the NNSA Sandia Field Office, told the crowd at the second annual Sandia Research & Technology Showcase at the Embassy Suites in Albuquerque. “We all have a vested interest in the science and technology coming from the DOE labs.” Dan said technology partnerships are vital to the Sandia mission. “Tech transfer is a mission requirement,” he said. “Lab technology must contribute to the country’s economic growth.” People from around the country attended the Sept. 10 event, which was free and open to the public. Sandia showcased its cutting-edge technology at a poster session where attendees mingled with Labs researchers. The posters focused on bioscience, computing and information science, energy and climate, and nanodevices and microsystems, and illustrated the range of Sandia’s work from early stage research through technology deployment.

Speakers and panels provided information on doing business with Sandia through licensing, partnerships, procurement, and economic development programs. Sandia VP and Chief Technology Officer Julia Phillips told the meeting that Sandia has a passion for research. “It is the foundation of who we are,” she said. “It is imperative we advance the frontiers of science and engineering. We as a nation cannot afford to be second.” Julia said Sandia has a world-class research portfolio and vast array of capabilities, and is advancing science through research challenges begun a year ago. “We deliver on our mission,” she said.

**Tech available for immediate licensing** Pete Atherton, senior manager of Industry Partnerships Dept. 7930, said Sandia is committed to industrial partnerships and tech transfer, and has many technologies available for immediate licensing. He said Sandia has launched a ready-to-sign program that lets certain technologies be licensed in a simplified process in as little as an hour. He singled out “hot technologies” including Decontamination Foam, used to neutralize chemical and biological agents; the Sandia Hand, a low-coast modular hand with interchangeable fingers; Enhanced Oil Recovery, which provides water-flood chemistry to get more oil from existing wells; Hyperspectral Imaging, fluorescence microscope and software that extract quantitative information from visuals; and Protocell, a nanoparticle that can more effectively deliver drugs to targeted cancer cells, developed and licensed through a partnership with the University of New Mexico. Pete said Sandia also transfers technology through open-source software such as LAMMPS, or Large-scale Atomic/Molecular Massively Parallel Simulator. LAMMPS, which has

been open source since 2004, has 150,000 downloads. It has helped users drastically cut design cycle times in diverse applications from shampoos to batteries.

**Hot tech, ready-to sign licenses** The vision for tech transfer at Sandia, Pete said, includes many more hot technologies, a growing portfolio of ready-to-sign licenses, greater access to research and inventors, and creating a place where scientists and business people can meet and collaborate. “We want to transform the showcase into a year-round function,” he said. Panel discussions moderated by Jackie Kerby Moore, manager of Technology and Economic Development Dept. 7933; Mary Monson, manager of Business Development and IP Management Dept. 7932; Ben Cook, manager in the CTO Programs Office Dept. 7911; and John Freisinger, president and CEO of Technology Ventures Corp., focused on available technologies, how to partner with Sandia, and how to take advantage of the Labs’ economic development programs, such as the New Mexico Small Business Assistance Program and the Sandia Science & Technology Park “Our work needs partners to commercialize it,” said panelist and licensing specialist Bob Westervelt (7932). “Our goal is to make it as simple as possible.” “Our showcase last year was quite successful,” Jackie says. “As a result, this year’s showcase generated a lot of buzz and drew even more attendance.” The showcase was attended by businesspeople from New Mexico, Arizona, California, Colorado, Pennsylvania, Tennessee, and Texas. Representatives came from the University of New Mexico, New Mexico State University, New Mexico Tech, Central New Mexico Community College, and the University of Texas El Paso. A number of state legislators attended and the New Mexico congressional delegation was fully represented. It was sponsored by Sandia, New Mexico Manufacturing Extension Partnership, Sandia Laboratory Federal Credit Union, New Mexico Economic Development Department, city of Albuquerque, Bernalillo County, Technology Ventures Corporation, and the Sandia Science & Technology Park.

## Water roundtable

(Continued from page 1)

solutions already in use that, if widely adopted, could make a significant dent in the widely recognized problem. “There is no silver bullet, but there is silver buckshot,” commented Carlee Brown, policy manager of the Western Governors’ Association on Water and Wildlife. The scope of the issue was delineated by Howard Passell (6926) in an opening talk. “The question is,” he summarized, “are there game-changing transformational solutions that don’t just shift the [water-supply] gap; or is it a zero sum game involving an increasing population consuming ever-larger amounts of a shrinking resource?”

**Conservation’s role** Presenting a calming view was John Entsminger of the Southern Nevada Water Authority, who said it was clear that increased population growth “doesn’t necessarily track with increased water use.” He cited a 33 percent drop in water use in some Southwestern areas, due to active (though costly) conservation measures, even as population in those areas increased markedly. Further words of comfort came from Ben Ruddell, a professor at Arizona State University. Answering audience suggestions that water pipes be constructed and placed parallel to oil pipes entering the US from Alberta, Canada, or extend to the Southwest from the Mississippi, Ruddell said that “virtual water” transfer was already happening in terms of fruits and vegetables grown elsewhere and sent to the Southwest. In this virtual pipeline, water is pre-used to grow plants that are then shipped elsewhere. So, in effect, the national highway system is already transferring water from wet to dry places. “Crops are the biggest source of virtual water,” he said, “and virtual water flows uphill to money.” The new accounting, though thought-provoking, doesn’t solve the obvious problem of sinking water levels in Southwestern reservoirs. Less palatable measures were reported to put more water in the taps of several localities: the purification of waste water for reuse as drinking water. The city of Albuquerque already purifies waste water for use on golf courses, but other communities have gone further, said a number of speakers. “People in New

“The Rio Grande is the only river I’ve ever seen that needs irrigation,” opened keynote speaker Sen. Tom Udall, D-N.M., quoting a line often attributed to Will Rogers. Describing the big river as at times the “Rio Sande,” the senator — an ardent conservationist — quoted a study to the effect that the current drought — the worst since the 1950s — combined with climate change could cost the nation a trillion dollars in economic losses. He talked about the need for better coordination among large-scale water users, better sensors to detect water leaks as they happen or even before, and more research to determine the limits to Southwestern population growth. While, he said, most observers believe the era of big government investments in dam building is over, he was co-sponsoring a bill to create a “smart water infrastructure” that would, among other benefits, better monitor stream flow and meter water used by irrigators.

Orleans are drinking water estimated to have already passed through eight sets of kidneys,” said an audience member. As unappetizing as that sounds, young people have already accepted the idea of water re-use far more easily than their parents did when it was proposed two decades earlier, said John Stomp, chief operating officer of the Albuquerque/Bernalillo County Water Utility Authority. (A fictional handheld device used to distill potable water from urine in the 1995 movie *Water-world*, elicited groans of disgust from an Albuquerque movie audience back then as actor Kevin Costner drank the result.) Stomp also mentioned that “the aquifer was rising under Albuquerque, through three years of the worst drought we’ve ever seen,” because of conservation and diversion efforts. In a major conservation possibility, Vince Tidwell (6926) said that municipal waste water and brackish groundwater could be substituted for drinking water by retrofitting electrical power generators. His analysis found that more than half the nation’s power plants could be retrofitted, increasing power generation costs by less than 10 percent. “Many of these plants are located in the arid western US,” he said. Others preached the benefits of cooperation among water agencies, rather than relying on what Max Yeh, principal researcher of the Percha/Animas Watershed Association, described as a “totally unique system of distributing water” — the Southwest water rights system. Privileges granted earliest users offer no incentives

to cooperate or even to accept new users.

**Agricultural use ‘part of our culture’** But Carlee Brown said, “It’s not a simple matter to move agricultural water to satisfy higher-value demand.” Agriculture and its attendant water use, she agreed, are 75 to 90 percent of water withdrawals, but “are part of our culture.” The most cost-effective method to deal with a water-shortage problem, she said, involved solving new demands through water transfers. This involves the voluntary sale, lease, or donation of intrastate supplies. “A water bank can sell or lease water rights for a period of time,” she said. “It’s already occurring in a voluntary, market-based framework. It’s one tool in the tool kit.” Other solutions, she said, lay in finding new supplies, conservation, re-use, or desalination. One person pointed out that relying on the social mechanism of raising water prices to cut use would mean that poor people drank less water. Jesse Roach (6926) agreed that employing a number of strategies “helps spread the pain,” but he pointed out that “evaporative demands rise with temperature,” so that increased evaporation from reservoirs, agriculture, and woodland and streamside areas meant less water available. “Simulations show reservoir levels dropping throughout the system as the impacts of climate change set in.”

### More water for drier times?

He did offer the hope that the trend toward bigger storms meant that better controls in reservoirs might mean more water stored for later use in dry times. Audience member Bill Turner, an Albuquerque businessman, told *Lab News* he had proposed an actual game-changing design to store Elephant Butte water underground, forestalling evaporation, but the plan was rejected by government agencies. Mike Hightower (6114) said that “the number, size, and severity of forest fires have grown significantly in the US over the past four decades, and winter ablation in burned areas reduces snowpacks by 50 percent.” Therefore, he said, “A 10 percent reduction in precipitation equals a 20 percent reduction in runoff in the Southwest.” He pointed out that costs to thin forests can be less than firefighting and damage costs. “If we don’t act, we may lose mountain watersheds and have no national forests in 50 years. But we have the technologies to do the necessary forest thinning.”



# Stronglinks

(Continued from page 1)

cuits, but won't close them if the missile doesn't perform as required. Once the circuit closes, the missile sends a signal, which then provides power to wake up and operate the system.

Stronglinks are in place in case something goes awry before or after launch, such as an accident that bypasses the launch accelerometer or other parts of the system and mistakenly supplies power that could set off the detonators, Marcus says.

He likens the firing system to a vault. Each stronglink receives a unique signal that opens the vault doors — shutters inside the weapon, one electrical and the other magnetic. Opening the shutters allows energy from the thermal battery to flow to a capacitor, which stores the energy capable of initiating the detonators. "That does not happen unless we get the right very, very unique signals that allow the shutter to open," Marcus says.

These safety components use mechanical parts because such parts are highly predictable in an accident. Like any system, the more that goes in, the more opportunity there is for something to go wrong.

"So our challenge is trying to provide this required safety without affecting reliability," Marcus says.

## Effort involves mechanical engineering

The work touches many mechanical engineering disciplines. "We are very broad across disciplines, and because it's a safety component we have to be deep in all these areas, too," Marcus says.

It's hard to imagine a better situation for mechanical design engineers, he says.

"We use fluid mechanics, we use strength of materials, we use materials science," he says. "We have to understand the effects of manufacturing processes: welding, machining, soldering, encapsulation. We do a lot of complex tolerance analysis, we get into dynamics. As a mechanical engineer, all those classes you take in mechanical design, we practice most of them."

With one generation of weaponeers retiring, the new guard takes over significant responsibilities, Marcus says.

To illustrate, he picks up a glass jar of jelly beans from a table in his office, describing it as a widget that

includes many green, red, white, yellow, and multicolor parts, plus the glass that encases them, a sticker, and the lid. All of it requires a profound understanding of the individual pieces and how they work together as a final product.

"Some of these parts are nuclear safety-critical, and the engineers have to identify those parts and ensure that we rigorously understand their design and the materials and processes used in manufacturing the design. With this knowledge, we are confident the white jelly bean with a bit of yellow is exactly what it's supposed to be. Then when the final assembly passes the rigorous tests we have in place, our product is ready to be inte-



CLEANROOM TESTING — Phil Aragon (2613), left, and Clint Holtey (2614) perform solenoid torque testing in a cleanroom. The testing allows the product realization team to validate solenoid models that predict stronglink performance. (Photo by Randy Montoya)

grated into the weapon that becomes part of the nation's stockpile," he says.

As an example, consider the jelly bean jar as a stand-in for the electrically activated stronglink, and think about an accident that crushes part of the weapon and burns away parts of its exterior. "What are we going to do to make sure that our safety components continue to keep the vault doors closed, even when there's an accident? It takes a lot of analysis, knowledge, and engineering judgment," Marcus says.

His young staff must design against the threat and ensure that the component's function is not compro-

mised — even in an accident — while meeting budgets and delivery schedules, he says.

## Reliability requirements

Development work to modernize the W76-1 began about 2000. Production began in 2006 and will continue for years. Manufacturing the AF&F is complicated by the fact that reliability is paramount and every part must meet stringent performance and safety requirements.

"The ability to produce a design that's manufacturable, repeatable, doesn't affect reliability, etc., it's pretty challenging," Marcus says.

"We're building hundreds and hundreds of these things and they all have to be identical and they all have to work," he says. "It adds another layer of complexity to the design process."

Every step is done by humans, not robots, from cleaning and testing parts to welding and assembling parts to encapsulating, soldering, and machining parts, Marcus says.

## Improving production, design systems

The W76-1 program office holds weekly videoconferences with its Kansas City Plant counterparts and monthly reviews at Kansas City to address the current production status and issues. Studying the production process provides important insights that allow Sandia designers to improve their new designs for programs like the W88 Alt and the B61 LEP.

"We recently had a special review that asked the question, How is our production going, where are we seeing the challenges? Where are we finding ourselves revisiting manufacturing issues over and over again? Is there a recurring theme?" Marcus says.

Production experience and reviews have shown the Sandia team where designs can be difficult to manufacture, and they help identify ways to improve those designs in the future, Marcus says. "We're learning that there are opportunities with development programs now to really flesh out precisely what we're measuring, what features in the design affect those measurements, and where small changes can make the design easier to manufacture and really provide benefit throughout the production cycle."

The reviews have concluded the electrical stronglink design, with 180 unique parts and 250 separate pieces, is robust and manufacturable, and that small changes can make the next design even better.

# A better benchmark for supercomputer performance

By Neal Singer

A new benchmark to more accurately measure the capabilities of modern supercomputers has been crafted by Sandia researcher Mike Heroux (1426), in collaboration with the creator of the widely used LINPACK



MIKE HEROUX

benchmark, Jack Dongarra and his colleagues at the University of Tennessee and Oak Ridge National Laboratory.

The new test — a relatively small program called HPCG, for "high performance conjugate gradient" — is being field-tested on a number of NNSA supercomputers. It is expected to be released at SC13, the supercomputing 2013 conference in Denver in November.

Says Mike, "We have known for quite a few years that LINPACK was not a good performance proxy for complex modern applications. But we could still design a cost-effective machine that satisfied two increasingly distinct design points: real application performance and LINPACK performance. Thus we got improvements for our application base and still posted a good TOP500 number [that certified the new machine was one of the 500 fastest in the world]."

But, he says, the two goals have diverged far enough that, like classroom teachers rebelling against "teaching for the test" rather than improving overall knowledge, "computer designers feel that designing for both is no

longer appropriate."

The National Nuclear Security Administration has supported work on the new test because, Mike says, "while NNSA realizes it needs to invest in new supercomputers over the coming decades, it is unwilling to spend public money to develop architecture solely to do well on LINPACK. NNSA wants a more meaningful measure."

LINPACK's influential semi-annual TOP500 listing of the 500 fastest machines has been noted worldwide for more than 25 years, initially because it had been considered a simple and accurate metric, readily understood and appreciated by non-experts.

"The TOP500 was and continues to be the best advertising supercomputing gets," Mike says. "Twice a year when the new rankings come out, we get articles in media around the world. My 6-year-old can appreciate what it means."

However, in recent years the gap between LINPACK performance and real applications performance has grown dramatically.

In the early years of supercomputing, applications and problems were simpler, better matching the algorithms and data structures of LINPACK. Since then, applications and problems have become much more complex, demanding a broader collection of capabilities from the computer system than LINPACK.

"The specifications of the LINPACK benchmark are like telling race cars designers to build the fastest car for a completely flat, open terrain," says Heroux. "In that setting the car has to satisfy only a single design goal. It does not need brakes, a steering wheel, or other control features, making it impractical for real driving situations."

The LINPACK benchmark pushes computer designers to build systems that have lots of arithmetic units but very weak data networks and primitive execution models.

"Because modern applications cannot use all the arithmetic units without better access to data and more flexible execution models," Mike says, "the extra arithmetic units are useless."

Mike led development of the new benchmark, starting with a teaching code he wrote to instruct students and junior staff members on how to develop parallel applications. This code later became the first "miniapp"

in the Mantevo project, which recently won a 2013 R&D 100 Award.

The technical challenge of HPCG is to develop a very small program that captures as much of the essential performance of a large application as possible without being too complicated to use. "We created a program with 4,000 lines that behaves a lot like a real code of 1 million lines but is much simpler," Mike says. "If we run HPCG on a simulator or new system and modify the code or computer design so that the code runs faster, we can make the same changes to make the real code run faster. The beauty of the approach is that it really works."

HPCG generates a large collection of algebraic equations that must be satisfied simultaneously. The conjugate gradient algorithm used in HPCG to solve these equations is an iterative method. It is the simplest practical method of its kind, so it is both a real algorithm that people care about, and not too complicated to implement.

One basis of the method's relevance is that it uses data structures that more closely match real applications. The data structures used by LINPACK are no longer used for large problems in real applications because they require the storage of many zero values. Decades ago, when application problems and computer memory sizes were much smaller, LINPACK data storage techniques were acceptable. Presently problem sizes are so large that data structures are designed to pay attention to what is zero and not zero, which is what HPCG does.

"By providing a new benchmark, we hope system designers will build hardware and software that will run faster for our very large and complicated problems," Mike says.

Some testing already done indicates the approach will work. More formal testing by November will show whether Mike, Sandia, and its collaborating labs have a product worth its salt.

The HPCG code tests science and engineering problems involving complex equations, and is not related to another Sandia-led benchmark effort known as Graph 500, which assesses and ranks the capabilities of super"big data" problems that search for relationships through graphs.

# High five

## Sandia reaches for a new milestone in community aid

By Nancy Salem

Sandia holds a special place in the history of the United Way of Central New Mexico (UWCNM). Since the Labs’ Employee Caring Program (ECP) was launched in 1957, Sandia has been the single largest supporter of the charitable organization’s annual campaign. Sandians have given more than \$76 million to hundreds of agencies serving tens of thousands of people needing help. The Labs’ per capita giving ranks in the top among companies of its size nationwide. “We couldn’t do it without you,” says Randy Woodcock, UWCNM’s vice president and chief strategic officer. “Sandia really does drive this campaign.”

Last year Sandia became the first New Mexico company to top the \$5 million mark in a single campaign when employees and retirees gave \$5,508,717, a 17.1 percent boost over 2011. “What Sandia accomplished last year was unheard of,” Woodcock says. “I had never seen a company of this size increase that much in one year.”

Building on that success, the 2013 ECP kicks off Oct. 7 with five goals. ECP campaign chairman Kelly Westlake, manager of Business Operations Support Dept. 10586, says Sandia’s objectives each year are guided by a fundamental principle. “The purpose is to help those who are most vulnerable,” he says. “Well-chosen goals and objectives point the activity in the right direction and keep the established activity on the right track. While percentages and goals have been established, the true goal and objective is to help those most vulnerable in our community.”



**This year’s ECP goals are:**

- Donate at least \$5.75 million, a 3 percent increase over last year.
- Raise participation rates in every division from the 2012 baseline.
- Achieve overall Labs participation of greater than 75 percent, up from 73. 6 percent last year.
- Continue to engage new employees (<5 years) in Sandia’s culture of giving by increasing their participation from 58.6 percent to at least 65 percent.
- Increase contributions to the Community Fund by at least 10 percent, or about \$150,000. Last year 28 percent of Sandia donations went to the Community Fund.

The campaign gets underway Oct. 7, 11 a.m.–1 p.m., in the Steve Schiff Auditorium lobby and courtyard with a barbecue and the opportunity to meet representatives of nonprofit agencies where Sandia employees volunteer. A

donation will be made to the Community Fund based on the number of Sandians who attend.

The campaign runs through Oct. 25. Fundraising events are planned, including book fairs Oct. 8-10 at the Thunderbird Cafeteria from 10 a.m.-2 p.m., Oct. 14-16 at the Steve Schiff Auditorium from 10 a.m.-4 p.m., and Oct. 22-24 in the IPOC second floor break room from 10 a.m.-2 p.m. On Oct. 17, ECP and HBE will host the Community Circuit from 11 a.m.-1 p.m. at Hardin Field. Strength stations will be set up around the park with one lap giving a full body workout. Participants will earn 1,000 Virgin HealthMiles.

When talking about the ECP, Kelly quotes Mother Teresa (“If you can’t feed 100 people, feed just one.”) and Albert Einstein (“The value of a man resides in what he gives and not in what he is capable of receiving” and “Only a life lived for others is worth living.”).

“Each donation, regardless of size, makes a significant impact,” Kelly says. “We are all blessed to be Sandians. There are people around us who are less fortunate. Visiting agencies supported by the United Way opens your eyes and opens your heart to the great things they are doing.”

Ed Rivera, president and CEO of UWCNM, says Sandia’s generosity inspires the community and changes lives. “The spirit of giving at Sandia has never been stronger and we offer our heartfelt thanks for your continued generosity,” he says. “We and all those who benefit from what you do thank you from the bottom of our hearts.”

### Top 10 reasons to give to the ECP

10. It’s easy. With handy payroll deduction, you don’t have to write checks.
9. Your donation is tax deductible. You’ll be grateful on April 15!
8. You have the power to choose where to make a difference — the Community Fund, a favorite nonprofit, or both!
7. Animals, schools, and churches are included. Your gift can connect you to your passion.
6. A little goes a long way. Sharing even an hour’s pay per month can make a big difference in someone’s life.
5. Kids will look up to you.
4. Karma. Pay it forward.
3. It’s good for you. Philanthropy boosts the immune system and releases endorphins.
2. Because once upon a time, someone helped you.

**And the No. 1 reason is:**


1. There’s strength in numbers. Together we can create a vibrant and vital community by improving lives. A strong community is a good place to call home.

### Corporate Cornerstone


*Every penny you give helps people in need*

The United Way of Central New Mexico established the Corporate Cornerstone program in 1997 to cover administrative expenses. All those costs are paid by companies that choose to direct their gifts to the program. Because of those corporate gifts, 100 percent of money donated by individuals goes directly to help people in need. When Corporate Cornerstone donations exceed administrative expenses, the excess goes to the Community Fund. From 1997 to 2011, Corporate Cornerstone companies contributed \$33.3 million. Lockheed Martin/Sandia is among the more than 70 Corporate Cornerstone companies. The program originated in New Mexico and has been adopted by United Ways across the country.


### I give because . . .



“I think it is important, and I am passionate about my community. I was raised being told how important it is to give back, especially because you never know how quickly you can be in a position of need. I believe that if you aren’t sharing your time, talent, and treasure with others, they really have no value or meaning.”  
— Katie Esquibel (7000)



“When I look around our community, I realize that there are a lot of people who could use some help. I contribute with the goal of making life a little easier for those in need.”  
— David Kuntz (1515)



“I give to an organization that saved my life. I want them to be able to continue to help others.”  
— Carla Sanchez (4200)

## ECP/ United Way Campaign

### October 7 - October 25

The ECP/United Way campaign runs from October 7-25 this year. Kelly Westlake, Sandia’s 2013 ECP Campaign Chair, encourages all to check out the website at [give.sandia.gov](http://give.sandia.gov) and take advantage of the opportunity to sign up for a payroll deduction that will go to support either our local community fund or any non-profit organization that we care about.



# Fix it: Community Fund helps heal the most serious wounds

By Nancy Salem

The United Way of Central New Mexico's Community Fund is a powerful tool in the effort to improve lives through systemic change.

"It's the best way to help the most vulnerable in our area. It allows the pooling of resources from a large number of individuals to accomplish strategic goals," says Jim Novak, senior manager of Tailored Operational Support Dept. 5950 and chairman of the UWCNM Community Impact Council (CIC).

The Community Fund supports a range of nonprofit agencies and programs that help people who are struggling to better themselves in Bernalillo, Sandoval, Torrance, and Valencia counties.

This year the CIC is implementing the UWCNM board's 2010 strategic plan calling for unified approaches to addressing community needs. Over the summer of 2013, teams representing a broad range of community partners developed strategy maps in self-sufficiency, health, and education. The maps will be the basis for awarding grants based on how effectively a program addresses a desired outcome.

"The United Way board asked, 'What are we trying to accomplish? Is the Community Fund as effective as it can be with the money?'" Jim says. "The CIC's goal is to get the most bang for the buck in allocating Community Fund dollars. We're moving toward a results-based accountability model. The measure of effectiveness is whether the organization's efforts have an impact."

*"Central New Mexico has many issues that need to be addressed, and if the Community Fund doesn't grow we can't achieve the broader goals."*

— Jim Novak, senior manager

Volunteers, including many Sandians, work on behalf of the CIC to oversee the Community Fund allocation process. They structure the call for proposals in the fall and lead the evaluation process starting in January. Several dozen volunteer panels assess applicants — who under the new strategy apply in issue areas, and can collaborate — and decide how to allocate funds.

"We're raising the bar on expectations of the Community Fund in moving the needle on community needs," Jim says.

His message to Sandians weighing how to allocate their United Way donation is that a lot of people work on quality control in how Community Fund money is spent. "In addition to the initial assessment, there is continued financial and programmatic review to ensure effective use of funds," Jim says. "If you want to impact education, you can be confident there is an organization managing the efficient and effective use of Community Fund dollars in that arena. You are contributing to specific strategies."

Last year the fund allocated \$4.9 million to 107 programs serving more than 250,000 people in central New Mexico. This year's goal is that the fund total 25 percent of the \$30 million campaign, or \$7.5 million. Last year Sandians donated \$1.6 million to the fund, or 28 percent of the Labs' total \$5.5 million campaign.

"Central New Mexico has many issues that need to be addressed, and if the Community Fund doesn't grow we can't achieve the broader goals," Jim says. "We want the fund to grow. I've seen the impact of the Community Fund, the stories, the vignettes, how it addresses issues. We need this."

Here's a look at two agencies supported by the Community Fund.

**New Day Youth & Family Services — A home away from home**

New Day started in 1976 as Albuquerque's first run-away and homeless shelter for adolescents. It's still a place teens can go when they're in crisis, but services have expanded.

"Troubled teens get a bad reputation, but we welcome them into our midst," says New Day Executive Director Steve Johnson. "They can make changes in their lives."

Teens come to the shelter on their own or are referred by protective services agencies or law enforcement. Many have been abused or neglected. "They hear about us and want to get away from home, take a break," Johnson says.

New Day's goal is to get a troubled teen into a safe, per-



NEW DAY offers safety to a troubled teen.

manent setting. "Some go home to parents or grandparents," Johnson says. "Sometimes they don't have a place to go — there are thousands of homeless kids in Albuquerque — and we find alternative placement such as foster or group homes."

Teens can stay at New Day, which serves more than 200 youths a year, several months if necessary, receiving counseling, guidance and, mostly importantly, safety. "All our kids have severe emotional needs," Johnson says. "At New Day, they experience a safe environment, physically and emotionally."

New Day has expanded its mission by building a transitional living program for young adults ages 17 to 21. It provides housing for up to 18 months and classes at its Life Skills Academy. "They learn all sorts of things: financial literacy, how to apply for a job, how to interview, how to have healthy relationships, eat well, exercise, and take care of themselves," Johnson says.

The Community Fund helped get the transitional living program off the ground. "We are really thankful for the United Way's role in helping us start this," Johnson says.

**Cornucopia — An alternative to being institutionalized**

For 30 years, Cornucopia has provided family-oriented day services to adults with developmental disabilities, the elderly, and the frail. The South Valley center serves more than 70 people a day.

Clients, all of whom are indigent, receive transportation, meals, and care from a highly trained staff. "Each client has his or her own individual support plan," says Executive Director Michelle Bishop-Couch.


Cornucopia is open Monday through Friday, and clients can come as often as they want free of charge. "We do not turn people away," Bishop-Couch says.

The program provides educational activities and referrals, and recently built a greenhouse where clients grow microgreens that are sold to local restaurants. "Bottom line, our mission is to prevent institutionalization," Bishop-Couch says. "We get those folks who can't just go to the senior center and then go home. They have to be supervised. They are very vulnerable. Their last stop is here before being put into a nursing home, where they could decline significantly. We help with self-sufficiency."

Support from the Community Fund has been imperative, Bishop-Couch says. "What's so cool about the Community Fund is that we're not a national name brand, we have no mothership in New York. We're a local, grassroots center. With the help of the United Way, we can do this right."



A CORNUCOPIA client helps out in the greenhouse.



ECP Kickoff Event

October 7<sup>th</sup>

11:00 a.m. – 1:00 p.m.

Steve Schiff Auditorium Lobby & Courtyard

United Way -- Community Fund Display

Adaptive Ski Program in New Mexico

Albuquerque CASA Program, Inc.

All Faiths

American Cancer Society

Animal Humane New Mexico

Animal Protection of New Mexico

ARCA

Assistance Dogs of the West

Believer's Center of Albuquerque-Outreach Activities

Big Brothers Big Sisters

Boys & Girls Club of Central New Mexico

Catholic Charities of New Mexico

Children's Grief Center of New Mexico

Diaper Bank of NM

Girl Scouts

Great SW Council Boy Scouts of America

Greater Albuquerque Habitat for Humanity

Healing the Children SW Chapter

Healthcare for the Homeless

High Desert Cat Rescue and Adoption

Hope Awareness Change

June's Senior Cat Rescue

Junior Achievement of New Mexico

Keshet Dance Company

Lap Dog Rescue of New Mexico, Inc.

Meals on Wheels of Albuquerque

New Mexico BioPark Society

New Mexico First Lego League

New Mexico Philharmonic

New Mexico Rangers

Presbyterian Ear Institute

Project Linus

Resource Center for Victims of Violent Death

Samaritan Counseling Center

St. Felix Food Pantry

Supercomputing Challenge

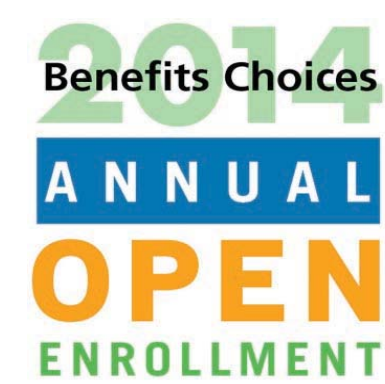
YMCA of Central New Mexico

YWCA — Middle Rio Grande

Guests will be given a form at the event. For each agency they visit and have them initial their form, \$1.00 will be donated to the United Way Community Fund.

Agencies were selected by Sandia Serves Volunteers based on where they spend their time volunteering





In early 2013, HBE conducted a series of focus groups to identify key areas of concern. Many of the plan changes listed below are a direct result of the focus groups. All of these changes are effective Jan. 1, 2014. Details can be found at [hbe.sandia.gov](http://hbe.sandia.gov).

Changes for Employees

- **Health Reimbursement Accounts (HRAs)** will now pay for the same expenses as the Flexible Spending Account (FSA). As in prior years, HRA funds will not reimburse until after all FSA funds are exhausted.
- **BCBSNM** will be using a new third-party vendor to administer its members’ FSA and HRA. The new vendor, ConnectYourCare, will provide members with a debit card to pay for qualified prescription, dental, and vision expenses. Medical expenses will continue to be paid directly to the provider. Paper claims can be used when the debit card isn’t used and payment is not auto-paid. As in 2013, FSA funds will be used prior to HRA funds.
- **Kaiser Permanente** will be using a new third-party vendor to administer its members’ FSA and HRA. The new vendor will provide members with a debit card to pay for eligible medical, dental, and vision expenses. What this means for you is that Kaiser FSA/HRA expenses will now be auto-substantiated. Members will no longer have to submit receipts for eligible in-network expenses. Paper claims for all types of healthcare expenses will also be accepted. As in prior years, FSA funds will be used prior to HRA funds.
- **UnitedHealthcare** will directly pay the in-network provider for care. UHC members who contribute to an

Did you know?

FSA funds are use-it-or-lose-it and must be exhausted before HRA funds can be used. HRA funds can roll over from year to year up to a capped amount based on family size.

How Will My Benefits Change This Year?  
2014 Open Enrollment Plan Changes

Open Enrollment dates

- **Active employees:** Oct. 28-Nov. 14
- **PreMedicare retirees:** Oct. 28-Nov. 15
- **Medicare retirees:** Oct. 15-Dec. 7

QUESTIONS? Contact HBE Customer Service at 505-844-HBES (4237).

FSA will no longer receive reimbursement checks from their FSA when they see a provider; instead the provider will be paid directly from your FSA.

- **Express Scripts** will cover the following at 100%:
  - ◆ Vitamin D (generic and over-the-counter) for individuals age 65 and over. Only single-entity vitamin D2 or D3 containing 1,000IU or less per dosage form will be covered.
  - ◆ Bowel cleansers (generic) for adults ages 50 to 75. Prescriptions are limited to 2 fills per 365 days.
  - ◆ Contraceptives for females ages 50 and younger. Includes Single Source and Multisource brand (marked “Dispense as Written”).
- **Davis Vision Plan**
  - ◆ For represented employees, there will be no changes to the 2014 vision plan.
  - ◆ For non-represented employees, 2014 coverage is being enhanced. The vision plan will now pay 100% with no co-pay for single vision, bifocal, trifocal, and lenticular lenses (currently it is a \$25 copay). Contact lenses and frames will have \$150 allowance (up from \$90 for frames and \$100 for contact lenses) plus 20% discount on coverages once every 24 months. All other benefits, such as routine eye exams, will remain without change from 2013. For non-represented employees, the premiums will be: \$1.50 for employee only; \$3 for employee + spouse, and \$4 for employee + family. If an employee does not want vision coverage, an employee must opt out during open enrollment.



Changes for PreMedicare Retirees

- **HRAs** will now reimburse IRS eligible medical, prescription, dental, and vision expenses.
- **BCBSNM** will be using a new third-party vendor to administer its members’ HRA. The new vendor, ConnectYourCare, will provide members with a debit card to pay for qualified prescription, dental, and vision expenses. Medical expenses will continue to be paid directly to the provider. Paper claims can be used when the debit card isn’t used and payment is not auto-paid.
- **Kaiser Permanente** will be using a new third-party vendor to administer its members’ HRA. The new vendor will provide members with a debit card to pay for eligible medical, dental, and vision expenses. What this means for you is that Kaiser FSA/HRA expenses will now be auto-substantiated. Members will no longer have to submit receipts for eligible in-network

Did you know?

Prescriptions for shingles in adults age 60+ are covered 100% by Express Scripts.

- expenses. Paper claims for all types of healthcare expenses will also be accepted.
- **Express Scripts** will cover the following at 100%:
    - ◆ Vitamin D (generic and over-the-counter) for individuals age 65 and over. Only single-entity vitamin D2 or D3 containing 1,000IU or less per dosage form will be covered.
    - ◆ Bowel cleansers (generic) for adults ages 50 to 75. Prescriptions are limited to 2 fills per 365 days.
    - ◆ Contraceptives for females ages 50 and younger. Includes Single Source and Multisource brand (marked “Dispense as Written”).

For times and locations of upcoming Benefit Fairs, where you can learn about your options and get answers to your questions, see the next page.

Beyond the basics

(Continued from page 1)

named Alex, who will talk to you about your care and coverage and explain your benefits in a simple way. It’s more like having a conversation with a benefits adviser than reading a plan description.

A lot of effort has been put into assessing what is needed, what kind of lifestyles and time demands our employees have, and we’ve used contemporary technology solutions to address these concerns. Healthcare is very personal, and I think the tools the HBE team has put in place acknowledge the need for privacy while still being user-friendly. The tools can help simplify the complex environment surrounding the new healthcare legislation.

We also offer onsite customer representatives from each of our insurance carriers. Their job is to advocate for employees — help them get answers to claims questions or find a doctor or fill out a form.

We’ve made other changes, too, such as streamlining the billing and claims process to remove some of the administrative burden from our workforce. These changes are based on feedback we’ve received from surveys, brown bag events, and focus groups. This is all part of the Labs’ commitment to continuous improvement. One thing we take very seriously is our advocacy for the workforce.

It is important to note that some things are outside the Labs’ control. For example, the amount individuals are allowed to contribute to their tax-deferred flexible spending accounts was reduced. We can’t do anything about that, but we are engaged in making changes and improving the things we can control. The wellness pieces we’ve put in place have incredibly high participation, and I can’t emphasize enough how important that is in helping the HBE team manage cost increases.

*LN: What are some of the other features of Sandia’s health plan that make it stand out among comparable organizations?*

**PHH:** A design goal of our health plan is to provide access to any healthcare provider. Another feature is being able to earn money to offset deductibles and out-of-pocket costs by participating in wellness activities and programs. There’s the science of design and the art of design. I think the wellness element is the art of the design.

*“We offer a whole range of benefit options that go beyond health benefits or retirement savings, and are designed to improve employees’ quality of life, both at work and outside of it.”*

**HR & Communications VP Pam Hansen Hargan**

*LN: How is Sandia’s pension plan performing in light of the unprecedented financial challenges we’ve faced in recent years?*

**PHH:** Sandia’s pension plan has improved its financial position substantially over the past few years. The investment committee has mitigated the chances of negative outcomes of the pension assets while improving the funded status. The volatility of the market makes it challenging, but I think we have anticipated where the market is going. I think we’re in a very good position now.

*LN: According to criteria established in the Wall Street Journal in January, Sandia’s 401k program scored a “green light,” ranking it above many comparable programs. What are some of the features that make it so strong?*

**PHH:** First, our matching contribution is great. It allows people to really make substantial progress toward their retirement savings goals. Also, the program allows participants to choose how and where they want to invest, based on their goals and risk tolerance. To help employees make smart choices and plan an

investment strategy, Sandia also engages an advisory service, Financial Engines. Finally, the size of our asset base lets us keep the fees for managing 401ks very low, so investment returns aren’t diminished by what it costs to operate the plan.

*LN: What other benefits are available for Sandians?*

**PHH:** Continuous learning is a critical component for workforce vitality at the Labs. We stay relevant through our learning programs, our tuition programs, the opportunity to network, and our mentoring systems. Communities of practice are another way to expand knowledge-sharing and discuss best practices.

Other offerings include vision and dental care options, and a whole plethora of other wellness services — working with a nutritionist to monitor dietary needs or taking classes on diabetes or stress management. Employees can use our new gym facility or sign up for free exercise classes. We are integrating wellness into the very fabric of our organization, into our culture, by delivering programs that really treat the whole person.

We also have an incredible community outreach program, including STEM education initiatives, tutoring, and other opportunities to give back to the community. We just built our 13th Habitat for Humanity home. When you have a workforce that is actively engaged in the community, morale goes up. Productivity goes up.

Sandia is committed to transparency in every aspect of our work, and that includes making sure that employees understand the portfolio of benefits we offer, and more importantly, how to make those benefits work for them. We offer a whole range of benefit options that go beyond health benefits or retirement savings, and are designed to improve employees’ quality of life, both at work and outside of it. I hope employees will really explore and take advantage of all the options that are available. Working at Sandia isn’t just a job — it’s a total life experience.





# Open Enrollment 2014

## Benefit Fairs schedule

QUESTIONS? Contact HBE Customer Service at 505-844-HBES (4237).

### For active employees

#### New Mexico

Active Open Enrollment Benefit Fairs				
Date	Thursday, October 31	Monday, November 4	Saturday, November 9	Tuesday, November 12
Location	Steve Schiff Auditorium Building 825	Steve Schiff Auditorium Building 825	Sandia Laboratory Federal Credit Union 3707 Juan Tabo Blvd	IPOC — 2 <sup>nd</sup> floor break room and Thunderbird Conference Room
Audience	Employees	Employees	Employees and Spouses	Employees
Fair Time	9 a.m.-2 p.m.	9 a.m.-2 p.m.	9 a.m.-2 p.m.	10 a.m.-2 p.m.

#### California

Active Open Enrollment Benefit & Health Fair, Sandia/California Bldg. 928	
Date	Wednesday, November 6
Location	7011 East Avenue, Bldg. 928, Livermore
Audience	Employees and Spouses
Benefit & Health Fair Time	11 a.m. -1:30 p.m.
Presentations Times	11:30 a.m.-12:30 p.m. Kaiser Permanente, BCBSNM, and UHC



**DID YOU KNOW?**  
An Onsite Customer Advocate is a representative from one of Sandia's plan carriers who's available to help you with health claims and coverage questions.

### New tool helps you understand, take advantage of your Sandia benefits

Want to learn more about your 2014 benefits options? Need help picking a plan?

Introducing Ask Alex — HBE's new interactive benefits counselor. Ask Alex offers an innovative approach to benefits communication — a conversation instead of a presentation. Through a series of interactive questions, Alex identifies your unique situation and presents options and explanations for a variety of benefits, including medical, dental, vision, and Flexible Spending Account (FSA). The information is relevant and personalized because Ask Alex knows the specifics of our Sandia Total Health plans. Upon completion of the Ask Alex conversation, Alex will send you a link to your Personalized Benefits website where you can review the data presented in the Ask Alex conversation, and revisit the conversation if you'd like to change your answers. Find Alex on [hbe.sandia.gov](http://hbe.sandia.gov).

### For New Mexico retirees

#### PreMedicare

PreMedicare Open Enrollment Benefits Fairs UNM Continuing Education		
Date	Wednesday, October 16	Tuesday, October 22
Fair Time	1-3:30 p.m.	9-11:30 a.m.
Presentation Time	2-3 p.m.	10-11 a.m.
Presenters	Extend Health/Marsh UnitedHealthcare Blue Cross Blue Shield of New Mexico	

#### Medicare

Medicare Open Enrollment Benefits Fairs UNM Continuing Education		
Date	Wednesday, October 16	Tuesday, October 22
Fair Time	9-11:30 a.m.	1- 3:30 p.m.
Presentation Time	9:30-11 a.m.	1:30-3 p.m.
Presenters	Extend Health Presbyterian Lovelace	

### For California retirees

#### PreMedicare

PreMedicare Open Enrollment Benefits Fairs Sandia/California, 928 Auditorium	
Date	Wednesday, November 6
Fair Time	11 a.m.-1:30 p.m.
Presentation Time	9:45-11:15 a.m.
Presenters	Extend Health/Marsh Kaiser Permanente Blue Cross Blue Shield of New Mexico UnitedHealthcare

#### Medicare

Medicare Open Enrollment Benefits Fairs Sandia/California 928 Auditorium	
Date	Wednesday, November 6
Fair Time	11 a.m.-1:30 p.m.
Presentation Time	8:30-9:30 a.m.
Presenters	Extend Health/Marsh Kaiser Permanente Blue Cross Blue Shield of New Mexico UnitedHealthcare



# Mileposts

New Mexico photos by  
Michelle Fleming  
California photos by  
Dino Vournas



Sandra Pacheco  
20 9536



Darrell Armstrong  
15 1682



Steven DeBlassie  
15 5642



John Desko  
15 2735



Kurt Graeber  
15 2712



Terry Hinnerichs  
15 1524



Micky Hogue  
15 5214



Dominic Kittredge  
15 10262



Marcus Knudson  
15 1646



Paul Kotula  
15 1819



Joyce Lesperance  
15 11200



Darick Lewis  
15 10659



# Recent Retirees



Mark Rumsey  
36 6121



Gary Chemistruck  
35 3653



Judy Case  
27 101



Ellen Gallegos  
18 11100



Lucia Hernandez  
16 10502



Patricia Bonham  
15 2956



# Mileposts

New Mexico photos by  
Michelle Fleming  
California photos by  
Dino Vournas



J. R. Turner  
35 5513



Bob Benner  
30 1422



Wendy Brothers  
30 5403



Gloria Christensen  
30 8225



Richard Kuehn  
30 5561



Jennifer Nelson  
30 6520



Jim Phelan  
30 6633



Roger Ten Clay  
30 5345



Tim Vargo  
30 2669



Debra Chavez  
25 10617



Patrick Griffin  
25 1340



Charles Hanley  
25 6112



Grant Heffelfinger  
25 1300



Declan Rieb  
25 5952



Steven Rohde  
25 5963



Courtenay Vaughan  
25 1423



Ron Weagley  
25 9538



David Castillo  
20 4144



Carole Lojek  
20 427



Marie Miller  
20 10503



Employee death

With a ‘voice for radio and a face for TV’ — and a heart as big as all outdoors — Mark Dickinson will be missed

Mark Dickinson, who started his Sandia career in 1986, died Sept. 21 at age 66. At the time of his death, Mark was a manager in Systems Integration Technology Support Group 230.

As his friends and colleagues reflect on his passing, a recurring theme becomes apparent: Mark was as nice a man as you can imagine, and one utterly devoted to his family and his work on behalf of the nation.

When he hired on at the Labs, Mark made critical contributions to advanced weapon development and nuclear weapon command and control systems and subsequently managed the interface between the weapons complex and the military custodians of the weapons.

Most recently in Mark’s career, says senior manager and colleague Jay Vinson (2910), he was a tireless advocate for reforming the manner in which the weapons complex managed the research, development, and production of nuclear weapons.



MARK DICKINSON

“Mark will be remembered for his high integrity and the care he exhibited toward his colleagues,” Jays says, “and we could also count on Mark having a positive attitude even during challenging times.

“Mark was one of the warmest and friendliest people I’ve known,” says colleague Joan March (232). “As a result, he knew many, many people at Sandia. If he didn’t know the answer to a technical question he could almost always direct you to someone who did know.”

He was “the guru” when it came to information technology, says Joan, often signing up to beta test new technologies like the Blackberry and iPad when they were first introduced at Sandia. His interest in personal technology didn’t stop at the office, either: He was an endless font of knowledge about the latest gadgets and services available in the home market, too, Joan recalls.

Mark was always ready to lend a helping hand, at work and at home. “In his neighborhood,” Joan says, “he was the first plumber, electrician, or carpenter friends and neighbors called. Mark never said ‘no’ to a request for help. The harder the problem was to solve, the better he liked the challenge. I already miss his smiling face, gregarious manner, and expert help.”

Throughout his career, Mark also supported the Accident Response Group (ARG), an NNSA organization based in Albuquerque that provides technical guidance and responds to US nuclear weapons accidents. As part of ARG’s readiness training, the group



MARK DICKINSON with his wife Patty at the wedding of their daughter, Megan.

conducts field exercises, of which Mark was a part. So were Cheryl Huppertz (412) and Aaron Hillhouse (2142).

“I had the opportunity to work the ARG Home Team with Mark many times,” says Cheryl. “Evenings were the most fun, as he always had stories to tell — mostly about his lovely daughters or some adventure he had been on.”

And Aaron writes: “A note with a tear — To my ever-reliable backup on the ARG Home Team. You always came through for me and always remembered to give me a humorous barb or two — I think I still owe you. I will miss your smile and laughter. May God bless you and your family.”

Colleagues Mike Gomez (232) and Fran Current (2996) use almost identical language in remembering Mark: “He was the nicest guy you could ever meet.” And, adds Mike, “he was as approachable a person as there is. His smile was nearly a universal constant.”

Mark was a huge fan of Apple products, Mike recalls, and felt the whole Labs should be using them. Because he and Mark were both the fathers of daughters, Mike says, their girls were “a constant conversation theme; I know he was an excellent father to Megan and Chelsea.”

Fran observes that Mark’s infectious personality was an asset on the job.

“He had this voice made for radio and an infectious smile made for TV that drew you into his conversations. These personal traits served him well with the difficult assignment of corralling his nuclear security enterprise peers into agreeing on how to conduct our inter-site business.

“And of course if you ever parked north of Bldg. 802 you saw his car. That faded yellow Corvette Stingray with the duct tape holding up the rear fiberglass — that was his. It’s safe to say that he got his money’s worth out of that car. Like Mark, the car was a classic that had been around the block a time or two, but remained totally in style. His plan was to restore the ‘Vette back to mint condition. It’s a safe bet, too, that if his life had not been cut short I’m sure you would have found Mark at Starbucks stylishly planning the project on the latest electronic gadget from Apple. Mark will be missed.”

Colleagues Jeanne Evans and Allison Kane (both 2214) recall that “Mark was masterful in working both with and through people to energize the team toward a common vision.” He used his persistence and extensive knowledge of the nuclear security enterprise, they say, to play a key role in developing what is now known as the Requirements Modernization and Integration.

“The true essence of Mark,” say Jeanne and Allison, “was not focusing on himself but rather being there for other people — always willing to help, to provide information, to answer questions, or whatever it took to benefit the whole. At the drop of a hat he would drive across the country to support a daughter’s move, or fix a dryer without complaint as he always saw things as a new adventure. Mark’s expertise in technology, his knowledge of and connections to the NSE leave a gaping hole. However, it is Mark’s smile, energy, and all-around positive attitude that will be so missed.”

Melissa Garner (5900) supported Mark’s organization for a short period of time in Bldg. 753. Says Melissa, “My fondest memory is that even after I left the group, every year on or around my birthday, Mark would send me an email wishing me a happy birthday. It always made me smile. I thought it was just the nicest thing, that he’d still remember after all that time I’d been gone from the group. From now on, I’ll always think about Mark on my birthday.”

“Mark was always a wonderful person to work with,” says retired Sandian Andy Rogulich, now with the Air Force Nuclear Weapons Center, “and I had the opportunity to work with him many times during his various jobs while at Sandia. I consider him a lifelong friend. He will be sorely missed. He touched the lives of so many people and will be remembered for the gracious person he was in life.”



FAMILY MAN — Mark Dickinson with wife Patty and daughters Chelsea, left, and Megan.





1,300 retirees and guests gather at Convention Center for annual social event



More than 1,300 Sandia retirees and their guests attended the 2013 Retiree Social in late August at the Albuquerque Convention Center. Retirees had the opportunity to reminisce and reconnect with one another during the lunch. Health, Benefits & Employee Services Center 3300 Director Rob Nelson addressed the audience, and the Sandia Corporate Archives and History Program displayed a photo presentation that featured photos of Sandians at work and at leisure from the 1950s onward. Attendees also had the opportunity to learn more about several programs and organizations, including Sandia Security, Sandia Clinical Services, the Sandia Corporate Archives and History Department, the Thunderbirds Retiree Association, SERP, the Energy Employees Occupational Illness Compensation Program (EEOICP), and the Sandia Community Involvement Team.



Photos by Norman Johnson

